MYSQL Module End Project

Topic : Library Management System

QUESTION:
Build a project based on Library Management System. It keeps track of all information about books in the library, their cost, status and total number of books available in the library.

Create a database named library and following TABLES in the database:
1. Branch
2. Employee
3. Books
4. Customer
5. IssueStatus
5. ReturnStatus

Attributes for the table:
1. Branch
Branch_no - Set as PRIMARY KEY
Manager_Id
Branch_address
Contact_no

```
1      -- Create the database
2 ●    CREATE DATABASE library;
3      -- Use the database
4 ●    USE library;
5
6      -- Create the Branch table
7 ● ⊖  CREATE TABLE  Branch (
8          Branch_no INT PRIMARY KEY,
9          Manager_Id INT,
10         Branch_address VARCHAR(50),
11         Contact_no VARCHAR(20)
12     );
13 ●   INSERT INTO Branch (Branch_no, Manager_Id, Branch_address, Contact_no)
14     VALUES
15         (1, 101, 'ABC STREET UK', '123-456-7890'),
16         (2, 102, 'CBC JUNCTION UK', '234-567-8901'),
17         (3, 103, 'AJC POST US', '345-678-9012'),
18         (4, 104, 'ZXY STREET UK', '456-789-0123'),
19         (5, 105, 'TYU STREET US', '567-890-1234'),
20         (6, 106, 'HUI POST CANADA', '678-901-2345'),
```

```
21          (7, 107, 'LIO CORNER PARIS', '789-012-3456'),
22          (8, 108, 'SDE JUNCTION AFRICA', '890-123-4567'),
23          (9, 109, 'OOI STREET INDIA', '901-234-5678'),
24          (10, 110, 'LOME JUNCTION ROME', '012-345-6789');
25 •    SELECT * FROM Branch;
```

Branch_no	Manager_Id	Branch_address	Contact_no
1	101	ABC STREET UK	123-456-7890
2	102	CBC JUNCTION UK	234-567-8901
3	103	AJC POST US	345-678-9012
4	104	ZXY STREET UK	456-789-0123
5	105	TYU STREET US	567-890-1234
6	106	HUI POST CANADA	678-901-2345
7	107	LIO CORNER PARIS	789-012-3456
8	108	SDE JUNCTION AFRICA	890-123-4567
9	109	OOI STREET INDIA	901-234-5678
10	110	LOME JUNCTION ROME	012-345-6789
NULL	NULL	NULL	NULL

2. Employee
Emp_Id – Set as PRIMARY KEY
Emp_name
Position
Salary
Branch_no - Set as FOREIGN KEY and it refer Branch_no in Branch table

```
28 • ⊝ CREATE TABLE  Employee (
29        Emp_Id INT PRIMARY KEY,
30        Emp_name VARCHAR(25),
31        Position VARCHAR(25),
32        Salary DECIMAL(10, 2),
33        Branch_no INT,
34        FOREIGN KEY (Branch_no) REFERENCES Branch(Branch_no)
35    );
36 •   INSERT INTO Employee (Emp_Id, Emp_name, Position, Salary, Branch_no )
37     VALUES
38     (11, 'Rinu', 'Front Office Assistant', 20000.00, 1),
39     (12, 'Amal', 'System Librarian', 30000.00, 1),
40     (13, 'Nishad', 'System Librarian', 25000.00, 3),
41     (14, 'Rahul', 'Assistant Librarian', 18000.00, 3),
42     (15, 'Krishna Kumar', 'Information Manager', 20000.00, 2),
43     (16, 'Muhammed', 'Librarian', 55000.00, 2),
44     (17, 'Swetha', 'Front Office Assistant', 21000.00, 7),
45     (18, 'Ram', 'Trainee Ass.Librarian', 20000.00, 8),
46     (19, 'Vimal', 'System Librarian', 23000.00, 7),
47     (20, 'Employee 20', 'Position 20', 60000.00, 1);
48 •   SELECT * FROM Employee;
```

Emp_Id	Emp_name	Position	Salary	Branch_no
11	Rinu	Front Office Assistant	20000.00	1
12	Amal	System Librarian	30000.00	1
13	Nishad	System Librarian	25000.00	3
14	Rahul	Assistant Librarian	18000.00	3
15	Krishna Kumar	Information Manager	20000.00	2
16	Muhammed	Librarian	55000.00	2
17	Swetha	Front Office Assistant	21000.00	7
18	Ram	Trainee Ass.Librarian	20000.00	8
19	Vimal	System Librarian	23000.00	7
20	Employee 20	Position 20	60000.00	1
NULL	NULL	NULL	NULL	NULL

3. Books
ISBN - Set as PRIMARY KEY
Book_title
Category
Rental_Price
Status [Give yes if book available and no if book not available]
Author
Publisher

```sql
51  CREATE TABLE Books (
52      ISBN VARCHAR(20) PRIMARY KEY,
53      Book_title VARCHAR(25),
54      Category VARCHAR(25),
55      Rental_Price DECIMAL(10, 2),
56      Status ENUM('yes', 'no'),
57      Author VARCHAR(25),
58      Publisher VARCHAR(25)
59  );
60  INSERT INTO Books (ISBN, Book_title, Category, Rental_Price, Status, Author, Publisher) VALUES
61  ('9780141182551', '1984', 'Fiction', 12.99, 'yes', 'George Orwell', 'Penguin Books'),
62  ('9780061122415', 'To Kill a Mockingbird', 'Fiction', 10.99, 'no', 'Harper Lee', 'HPMC'),
63  ('9780743273565', 'The Great Gatsby', 'Fiction', 8.99, 'yes', 'F. Scott Fitzgerald', 'Scribner'),
64  ('9780141439563', 'Pride and Prejudice', 'Fiction', 7.99, 'no', 'Jane Austen', 'Penguin Classics'),
65  ('9780140449146', 'Frankenstein', 'Fiction', 9.99, 'yes', 'Mary Shelley', 'Penguin Classics'),
66  ('9780064407663', 'Charlottes Web', 'Children', 6.99, 'yes', 'E.B. White', 'HarperCollins'),
67  ('9780439023528', 'The Hunger Games', 'Young Adult', 11.99, 'no', 'Suzanne Collins', 'Scholastic Press'),
68  ('9780439554930', 'Harry Potter', 'Children', 9.99, 'yes', 'J.K. Rowling', 'Scholastic Ltd'),
69  ('9780544003415', 'The Hobbit', 'Fantasy', 10.99, 'yes', 'J.R.R. Tolkien', 'Mariner Books'),
70  ('9780316015844', 'Twilight', 'Young Adult', 8.99, 'yes', 'Stephenie Meyer', 'Little, Brown and Company');
71  SELECT * FROM Books;
```

ISBN	Book_title	Category	Rental_Price	Status	Author	Publisher
9780061122415	To Kill a Mockingbird	Fiction	10.99	no	Harper Lee	HPMC
9780064407663	Charlottes Web	Children	6.99	yes	E.B. White	HarperCollins
9780140449146	Frankenstein	Fiction	9.99	yes	Mary Shelley	Penguin Classics
9780141182551	1984	Fiction	12.99	yes	George Orwell	Penguin Books
9780141439563	Pride and Prejudice	Fiction	7.99	no	Jane Austen	Penguin Classics
9780316015844	Twilight	Young Adult	8.99	yes	Stephenie Meyer	Little, Brown and Company
9780439023528	The Hunger Games	Young Adult	11.99	no	Suzanne Collins	Scholastic Press
9780439554930	Harry Potter	Children	9.99	yes	J.K. Rowling	Scholastic Ltd
9780544003415	The Hobbit	Fantasy	10.99	yes	J.R.R. Tolkien	Mariner Books
9780743273565	The Great Gatsby	Fiction	8.99	yes	F. Scott Fitzgerald	Scribner
NULL	NULL	NULL	NULL	NULL	NULL	NULL

4. Customer

Customer_Id - Set as PRIMARY KEY
Customer_name
Customer_address
Reg_date

```sql
74 •  ⊖ CREATE TABLE Customer (
75         Customer_Id INT PRIMARY KEY,
76         Customer_name VARCHAR(255),
77         Customer_address VARCHAR(255),
78         Reg_date DATE
79     );
80     -- Insert records into the Customer table
81 •  INSERT INTO Customer (Customer_Id, Customer_name, Customer_address, Reg_date) VALUES
82     (111, 'Abhai', 'ABC STREET UK', '2023-01-01'),
83     (112, 'Alex', 'ZXY STREET UK', '2023-05-01'),
84     (113, 'Nitara', 'ALIO CORNER PARIS', '2023-03-01'),
85     (114, 'Zoya', 'ZXY STREET UK', '2023-04-01'),
86     (115, 'Ali', 'ABC STREET UK', '2023-05-01'),
87     (116, 'Merlin', 'TYU STREET US', '2023-04-01'),
88     (117, 'Shine', 'SDE JUNCTION AFRICA', '2023-07-01'),
89     (118, 'Thomas', 'SDE JUNCTION AFRICA', '2023-02-01'),
90     (119, 'Amoy', 'TYU STREET US', '2023-02-01'),
91     (210, 'Lijoy', 'HUI POST CANADA', '2023-1-01');
92 •  SELECT * FROM Customer;
```

Customer_Id	Customer_name	Customer_address	Reg_date
111	Abhai	ABC STREET UK	2023-01-01
112	Alex	ZXY STREET UK	2023-05-01
113	Nitara	ALIO CORNER PARIS	2023-03-01
114	Zoya	ZXY STREET UK	2023-04-01
115	Ali	ABC STREET UK	2023-05-01
116	Merlin	TYU STREET US	2023-04-01
117	Shine	SDE JUNCTION AFRICA	2023-07-01
118	Thomas	SDE JUNCTION AFRICA	2023-02-01
119	Amoy	TYU STREET US	2023-02-01
210	Lijoy	HUI POST CANADA	2023-01-01
NULL	NULL	NULL	NULL

5. IssueStatus

Issue_Id - Set as PRIMARY KEY
Issued_cust – Set as FOREIGN KEY and it refer customer_id in CUSTOMER table
Issued_book_name
Issue_date
Isbn_book – Set as FOREIGN KEY and it should refer isbn in BOOKS table

```sql
96  ● ⊝  CREATE TABLE IssueStatus (
97              Issue_Id INT PRIMARY KEY,
98              Issued_cust INT,
99              Issued_book_name VARCHAR(25),
100             Issue_date DATE,
101             Isbn_book VARCHAR(20),
102             FOREIGN KEY (Issued_cust) REFERENCES Customer(Customer_Id),
103             FOREIGN KEY (Isbn_book) REFERENCES Books(ISBN)
104         );
105 ●     INSERT INTO IssueStatus (Issue_Id, Issued_cust, Issued_book_name, Issue_date, Isbn_book)
106       VALUES
107       (21, 111, '1984', '2023-02-21', '9780141182551'),
108       (22, 112, 'To Kill a Mockingbird', '2023-02-22', '9780061122415'),
109       (23, 113, 'The Great Gatsby', '2023-02-23', '9780743273565'),
110       (24, 111, 'Pride and Prejudice', '2023-02-24', '9780141439563'),
111       (25, 114, 'Frankenstein', '2023-02-25', '9780140449146'),
112       (26, 116, 'Charlottes Web', '2023-02-26', '9780064407663'),
113       (27, 117, 'The Hunger Games', '2023-02-27', '9780439023528'),
114       (28, 115, 'Harry Potter', '2023-02-28', '9780439554930'),
115       (29, 119, 'The Hobbit', '2023-02-28', '9780544003415'),
116       (30, 210, 'Twilight', '2023-02-3', '9780316015844');
```

Issue_Id	Issued_cust	Issued_book_name	Issue_date	Isbn_book
21	111	1984	2023-02-21	9780141182551
22	112	To Kill a Mockingbird	2023-02-22	9780061122415
23	113	The Great Gatsby	2023-02-23	9780743273565
24	111	Pride and Prejudice	2023-02-24	9780141439563
25	114	Frankenstein	2023-02-25	9780140449146
26	116	Charlottes Web	2023-02-26	9780064407663
27	117	The Hunger Games	2023-02-27	9780439023528
28	115	Harry Potter	2023-02-28	9780439554930
29	119	The Hobbit	2023-02-28	9780544003415
30	210	Twilight	2023-02-03	9780316015844
NULL	NULL	NULL	NULL	NULL

6. ReturnStatus
Return_Id - Set as PRIMARY KEY
Return_cust
Return_book_name
Return_date
Isbn_book2 - Set as FOREIGN KEY and it should refer isbn in BOOKS table

```sql
120  ●  ⊖  CREATE TABLE ReturnStatus (
121            Return_Id INT PRIMARY KEY,
122            Return_cust INT,
123            Return_book_name VARCHAR(25),
124            Return_date DATE,
125            Isbn_book2 VARCHAR(20),
126            FOREIGN KEY (Return_cust) REFERENCES Customer(Customer_Id),
127            FOREIGN KEY (Isbn_book2) REFERENCES Books(ISBN)
128        );
129  ●    INSERT INTO ReturnStatus (Return_Id, Return_cust, Return_book_name, Return_date, Isbn_book2)
130        VALUES
131        (1, 111, '1984', '2024-03-01', '9780141182551'),
132        (2, 112, 'To Kill a Mockingbird', '2024-03-02', '9780061122415'),
133        (3, 113, 'The Great Gatsby', '2024-03-03', '9780743273565'),
134        (4, 114, 'Pride and Prejudice', '2024-03-04', '9780141439563'),
135        (5, 115, 'Frankenstein', '2024-03-05', '9780140449146'),
136        (6, 116, 'Charlottes Web', '2024-03-06', '9780064407663'),
137        (7, 117, 'The Hunger Games', '2024-03-07', '9780439023528'),
138        (8, 118, 'Harry Potter', '2024-03-08', '9780439554930'),
139        (9, 119, 'The Hobbit', '2024-03-09', '9780544003415'),
140        (10, 210, 'Twilight', '2024-03-10', '9780316015844');
```

Result Grid | Filter Rows: | Edit: | Export/Import: | Wrap Cell Content: ᴵA

Return_Id	Return_cust	Return_book_name	Return_date	Isbn_book2
1	111	1984	2024-03-01	9780141182551
2	112	To Kill a Mockingbird	2024-03-02	9780061122415
3	113	The Great Gatsby	2024-03-03	9780743273565
4	114	Pride and Prejudice	2024-03-04	9780141439563
5	115	Frankenstein	2024-03-05	9780140449146
6	116	Charlottes Web	2024-03-06	9780064407663
7	117	The Hunger Games	2024-03-07	9780439023528
8	118	Harry Potter	2024-03-08	9780439554930
9	119	The Hobbit	2024-03-09	9780544003415
10	210	Twilight	2024-03-10	9780316015844
NULL	NULL	NULL	NULL	NULL

Display all the tables and Write the queries for the following :
1. Retrieve the book title, category, and rental price of all available books.

```sql
146  ●    SELECT Book_title, Category, Rental_Price
147        FROM Books
148        WHERE Status = 'yes';
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ᴵA

Book_title	Category	Rental_Price
Charlottes Web	Children	6.99
Frankenstein	Fiction	9.99
1984	Fiction	12.99
Twilight	Young Adult	8.99
Harry Potter	Children	9.99
The Hobbit	Fantasy	10.99
The Great Gatsby	Fiction	8.99

2. List the employee names and their respective salaries in descending order of salary.

```
152 •    SELECT Emp_name, Salary
153      FROM Employee
154      ORDER BY Salary DESC;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Emp_name	Salary
Employee 20	60000.00
Muhammed	55000.00
Amal	30000.00
Nishad	25000.00
Vimal	23000.00
Swetha	21000.00
Rinu	20000.00
Krishna Kumar	20000.00
Ram	20000.00
Rahul	18000.00

3. Retrieve the book titles and the corresponding customers who have issued those books.

```
158 •    SELECT b.Book_title, c.Customer_name
159      FROM IssueStatus i
160      JOIN Books b ON i.Isbn_book = b.ISBN
161      JOIN Customer c ON i.Issued_cust = c.Customer_Id;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Book_title	Customer_name
1984	Abhai
To Kill a Mockingbird	Alex
The Great Gatsby	Nitara
Pride and Prejudice	Abhai
Frankenstein	Zoya
Charlottes Web	Merlin
The Hunger Games	Shine
Harry Potter	Ali
The Hobbit	Amoy
Twilight	Lijoy

4. Display the total count of books in each category.

```
165 •   SELECT Category, COUNT(*) AS Total_Count
166     FROM Books
167     GROUP BY Category;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ⊤A

Category	Total_Count
▶ Fiction	5
Children	2
Young Adult	2
Fantasy	1

5. Retrieve the employee names and their positions for the employees whose salaries are above Rs.50,000.

```
171 •   SELECT Emp_name, Position
172     FROM Employee
173     WHERE Salary > 50000;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ⊤A

Emp_name	Position
▶ Muhammed	Librarian
Employee 20	Position 20

6. List the customer names who registered before 2022-01-01 and have not issued any books yet.

```
177 •   SELECT Customer_name
178     FROM Customer
179     WHERE Reg_date < '2022-01-01'
180     AND Customer_Id NOT IN (SELECT Issued_cust FROM IssueStatus);
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: ⊤A

Customer_name

7. Display the branch numbers and the total count of employees in each branch.

```
184 •    SELECT Branch_no, COUNT(*) AS Total_Count
185      FROM Employee
186      GROUP BY Branch_no;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Branch_no	Total_Count
1	3
2	2
3	2
7	2
8	1

8. Display the names of customers who have issued books in the month of February 2023.

```
190 •    SELECT DISTINCT c.Customer_name
191      FROM IssueStatus i
192      JOIN Customer c ON i.Issued_cust = c.Customer_Id
193      WHERE YEAR(i.Issue_date) = 2023
194      AND MONTH(i.Issue_date) = 2;
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Customer_name
Abhai
Alex
Nitara
Zoya
Merlin
Shine
Ali
Amoy
Lijoy

9. Retrieve book_title from book table containing history.

```
198 •    SELECT Book_title
199      FROM Books
200      WHERE Category = 'History';
201
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Book_title

10. Retrieve the branch numbers along with the count of employees for branches having more than 2 employees.

```
204 •    SELECT Branch_no, COUNT(*) AS Total_Count
205      FROM Employee
```

Result Grid | Filter Rows: | Export: | Wrap Cell Content: IA

Branch_no	Total_Count
1	3

- **ATHIRA K P - DSML- 19**